

What is claimed is:

1. A method for determining leaks at the seal of a valve or a valve rod, in particular of a process valve, **characterized in that**

to determine the leak, the pressure is determined, if appropriate as a function of time, in a control volume between a first valve-rod seal and a second valve-rod seal, and this pressure is used to calculate the leak flow rate.

2. The method according to Claim 1, **characterized in that**

the value obtained for the leak flow rate is used to draw conclusions as to whether the seal is sealed, and in this way a seal replacement time is determined.

3. The method according to Claim 2, **characterized in that**

the control volume is discontinuously opened or emptied and then closed again, and then the pressure rise in the control volume is measured.

4. The method according to Claim 3, **characterized in that**

the pressure of the control volume is limited, and when an upper pressure level is reached, the control volume is emptied until a low closing pressure has been established.

5. The method according to Claim 3, **characterized in that**

the control volume is vented or emptied via a switching valve which is actuated by pressure switch means, and then a leak flow rate is determined as a function of the closing time, the pressure in the control volume and the state equations of the working medium.

6. The method according to Claim 4, **characterized in that**

an upper pressure level and a low closing pressure are recorded by pressure switches or by a pressure sensor,

and then a leak flow rate is determined as a function of the closing time, the pressure in the control volume and the state equations of the working medium.

7. The method according to claim 5,  
**characterized in that**

the switching valve is driven by means of a control programme in such a way that when a test cycle is initiated, the individual steps of the test cycle take place automatically.

8. The method according to claim 7,  
**characterized in that**

the test cycle includes the following steps;

- opening the switching valve and venting the control volume,
- closing the control volume and starting the control time,
- determining a pressure rise by recording the control volume pressure over time,
- evaluating and generating a message or an alarm in the event of predetermined pressure rise values being exceeded.

9. The method according to claim 1,  
**characterized in that**

the control volume is vented via a flow resistance, upstream of which there is a particle filter, and the differential pressure between intermediate volume pressure and pressure downstream of the flow resistance is measured, and the degree of soiling of the filter is additionally determined therefrom.

10. A device for determining leaks at the seal of a valve or a valve rod, in particular of a process valve,  
**characterized in that**

a control volume (30) is designed between a first valve-rod seal (10) and a second valve-rod seal (20), and in that at least one pressure sensor and/or pressure switch (P1, P2, ..., Pn) is used to monitor the pressure of this

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control volume (30), and this control volume is logic-connected to an evaluation unit (40) or a position regulator (41) in order to determine a leak flow rate.

11. The device according to Claim 10,  
**characterized in that**

the control volume (30) can be vented or emptied via a flow resistance (50).

12. The device according to Claim 11,  
**characterized in that**

a filter (60) is connected upstream of the flow resistance (50).

13. The device according to Claim 12,  
**characterized in that**

a further pressure sensor (Pn) is arranged downstream of the filter (60), and to determine the degree of soiling the differential pressure between the pressure in the control volume (30) and the pressure downstream of the filter (60) is formed or measured, it being possible, if appropriate, to generate a command and/or a signal to change the filter.

14. The device according to claim 10,  
**characterized in that**

the control volume (30) can be vented or emptied via a switching valve (V1), which can be actuated by means of a pressure switch (Px).

15. The device according to claim 10,  
**characterized in that**

the control volume (30) can be vented or emptied via a switching valve (V1) which can be actuated by means of a pressure-relief valve.

16. The device according to claim 15,  
**characterized in that**

the switching valve (V1) can be driven by means of an evaluation unit (40) or a position regulator (41).

17. The device according to claim 15,  
**characterized in that**

the switching valve (V1) is a directional control valve.

18. The device according to Claim 15,  
**characterized in that**  
the switching valve (V1) is a 2/2 directional control valve.

19. The device according to claim 10,  
**characterized in that**  
the control volume (30) can be vented into a closed or closeable volume.

20. The device according to claim 10,  
**characterized in that**  
when suitable leak flow rate limit values are reached, a command and/or a signal to change the valve-rod seal can be generated automatically.

21. The device of claim 10 wherein said process valve can be monitored remotely.

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